DECISION MEMO

Salmon August Reforestation Project
U.S. Forest Service
Pacific-Southwest Region
Salmon/Scott River Ranger District
Siskiyou County, California

BACKGROUND

The Salmon/Scott River Ranger District, Klamath National Forest, proposed the Salmon August Reforestation Project to promote reforestation on National Forest System lands burned during the Wallow Fire (Part of the Salmon-August Complex) see the map in Appendix A for location information.

The Wallow Fire burned through 65,342 acres in the summer of 2017. Fire severity exhibited a mosaic: 26% unburned or very low severity, 29% low severity, 19% moderate severity, and 26% high severity. Slopes were comprised of heavily timbered areas, oak and hardwoods, chaparral species, and conifer plantations. Heavy fuel loading will result from fallen snags. This fuel loading predisposes areas to future higher intensity and severity wildfires and further inhibits conifer regeneration. Stands that were previously dominated by conifers will likely remain in early successional conditions (e.g. brushfields), reducing a return to mid- to late-successional mixed conifer forests.

The desired condition is based on Management Area direction for Riparian Reserve and Late Successional Reserve management areas present in the project area. Primarily this project seeks to restock conifer-dominated stands where appropriate given the historic variability, aspect, and site class of particular stands. Hardwood and brush-dominated stands are valuable components of the ecosystem, and the desired condition includes those features where they represent the natural vegetative cover.

The purpose of the project is to facilitate reforestation and reduce fuel loading on National Forest System lands burned during the Wallow Fire. These activities will promote the establishment of desired conifers in existing plantations and natural stands lost during the fire. Retaining and promoting growth of Late Successional Reserve habitat will require both the protection and maintenance of the existing stands of late-successional forest as well as managing young stands for the development of future late-successional habitats. The proposed treatments will aid the establishment of native conifer diversity and forest cover within the burned stands. It will also reduce the amount of hazardous fuels created by fire-related mortality. This project will maintain, and eventually restore conditions of late-successional and old growth forest ecosystems, which serve as habitat for associated wildlife. Treatments designed in this project contribute to these habitat conditions and support the objectives of the Late Successional Reserve.

DECISION

The Project Proposal that was presented during the public scoping period included 155 acres of planting, including 94 acres of site preparation and 61 acres of planting only without site preparation. This decision is only for the 94 acres including site preparation, a separate decision for the planting only unit (450-40) was issued on February 28, 2018.

I have decided to approve implementation of the Salmon August Reforestation Project to promote reforestation on National Forest System lands burned during the Wallow Fire (part of the Salmon August Complex).

The proposed action was designed to meet the purpose and need for action. The proposed action for this decision will treat about 94 acres within the 65,342-acre fire perimeter.

Planting with Site Preparation (94 acres)

Site preparation to reduce fuel loading and prepare the area for planting will be accomplished by a combination of cutting and handpiling of small diameter conifers and hardwoods (less than 12" dbh) and brush as well as subsequent burning of piles. Additional activities may also include slashing of standing dead material (less than 15" dbh) as necessary. Brush and dead and dying trees will be removed to prepare the site for planting. Where they exist, healthy conifers and hardwoods will be left on site.

Tree planting (reforestation) will occur by hand methods, using either bare root or container stock. Within treatment stands, planting will only take place in those areas previously stocked with conifers. Since the terrain is very rocky and contains numerous sites that cannot be planted, reforesting by hand will provide for the desired spatial variability within treatment stands and across the project area. Tree species used for planting will roughly correspond with historical stand composition, varying by forest type. An average of 220-300 trees per acre will be planted. Additional planting survival techniques may be used to increase survival of planted trees. These techniques include, but are not limited to: hand grubbing (to release for survival), vexar tubing for browse prevention, and shade blocks for improved microsite conditions.

Access

Access for this project will be accomplished by use of roads on the National Forest Transportation System.

Categorical Exclusion

This action is categorically excluded from documentation in an environmental impact statement (EIS) or an environmental assessment (EA). The applicable category of actions is identified in agency procedures as 36 CFR 220.6 (e)(5). This category of action is applicable because the proposed actions are listed in examples in 36 CFR 220.6(e)(5)(ii), "*Regeneration of an area to native trees species, including site preparation that does not involve the use of herbicides or result in vegetation type conversion. Planting trees or mechanical seed dispersal of native tree species following a fire, flood, or landslide.*"

I find that there are no extraordinary circumstances that would warrant further analysis and documentation in an EA or EIS. I took into account resource conditions identified in agency procedures that should be considered in determining whether extraordinary circumstances might exist:

- Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species will be adversely impacted by this action (see the Categorical Exclusion Checklist and supporting documentation located on the project webpage)
    - There is no habitat for any wildlife species listed as Proposed, Threatened, Endangered, or Sensitive within the areas proposed for treatment.
    - A botanical assessment was conducted and there is no habitat for any botanical species listed as Proposed, Threatened, Endangered, or Sensitive within the areas proposed for treatment. The Project is not within the range or habitat of *Arabis macdonaldiana, Astragalus applegatei, Frittilaria gentneri,* or *Phlox hirsuta*. No federal listed Threatened, Endangered, Proposed, or Sensitive species will be affected by this project.
    - The project will have no effect on SONCC coho salmon or SONCC coho Critical Habitat. The project will have no effect for UKT Chinook salmon and SONCC coho salmon Essential Fish Habitat. This project will have no effect on individuals and will not lead to a trend towards federal listing for aquatic Forest Service Sensitive species.
- Flood plains, wetlands, or municipal watersheds – None exist within the project area. No extraordinary circumstances exist for this resource condition.
- Congressionally designated areas such as wilderness, wilderness study areas, or national recreation areas – None exist within the project area boundary. No extraordinary circumstances exist for this resource condition.
- Inventoried roadless areas or potential wilderness areas – The Crapo Inventoried Roadless Area (IRA) is present within the project area. There are 45 acres of site preparation and planting activities proposed within the IRA, accounting for 3% of the Crapo IRA. The Forest Plan provides guidance for management of IRAs, the plan provides that "[n]o new roads will be built in remaining unroaded portions of inventoried (RARE II) roadless areas in Key Watersheds" (Forest Plan S&G 6-23, pg. 4-25); and "[r]eleased roadless areas will be managed according to the objectives of the management area in which they occur" (Forest Plan S&G 14-1, pg. 4-38). The project meets the objective set forth for the Little North Fork/Crapo Late Successional Reserve of encouraging reforestation to accelerate the development of habitat in both high and moderate intensity burned areas. This project does not violate the 2001 Roadless Rule since the Final Rule does not prohibit reforestation activities and site preparation activities fall under Section 294.13(b)(1)(ii) of the Final Rule which provides that timber may be cut, sold, or removed from IRAs to *"...maintain or restore the characteristics of ecosystem composition and structure"* and Section 294.13(b)(2) of the Final Rule provides that timber may be cut, sold, or removed from IRAs when *"...incidental to implementation of a management activity not otherwise prohibited by this subpart."* A Decision Memorandum for, Barnie Gyant, Deputy Regional Forester Pacific Southwest Region was issued on March 21, 2018 approving the proposed activities within the Crapo IRA. The determination reached within the decision memorandum was that the project is consistent with the 2001 Roadless Area Conservation Rule, a Washington Office briefing

is not necessary, and it will protect roadless area characteristics. No extraordinary circumstances exist for this resource condition.

- Research natural areas – None are present within the project area. No extraordinary circumstances exist for this resource condition.
- American Indians and Alaska Native religious or cultural sites – Implementation of the proposed action will not adversely affect American Indian religious or cultural sites. This project was cleared as a Screened Undertaking under the R5 Programmatic Agreement, Appendix D, Class 2.3 (d and bb), see Archaeological Survey Report #R2018-05-05-2430-0. There are no known archaeological sites within the project area; however, if any previously unknown cultural resources are discovered during implementation, notify the district's archaeologist immediately.
- Archaeological sites, or historic properties or areas –Implementation of the proposed action will not adversely affect American Indian religious or cultural sites. This project was cleared as a Screened Undertaking under the R5 Programmatic Agreement, Appendix D, Class 2.3 (d and bb), see Archaeological Survey Report #R2018-05-05-2430-0. There are no known archaeological sites within the project area; however, if any previously unknown cultural resources are discovered during implementation, notify the district's archaeologist immediately.

PUBLIC INVOLVEMENT

This action was originally listed as a proposal on the Klamath National Forest Schedule of Proposed Actions and updated periodically during the analysis. Scoping letters were sent to interested and affected parties on December 15, 2017. A Legal Notice ran in the Siskiyou Daily News on Thursday December 21, which marked the start of the 30-day scooping period for the project. Comments were received from the Salmon River Restoration Council and the Klamath Siskiyou Wildlands Center, the comments and the Forest responses can be found in Appendix B.

FINDINGS REQUIRED BY OTHER LAWS AND REGULATIONS

The National Forest Management Act

This decision is consistent with the National Forest Management Act as implemented by the Klamath National Forest Land and Resource Management Plan (Forest Plan). Project activities and design features were developed in compliance with the Forest Plan Management Direction as described in Table 1 and Appendix C respectively. This decision involves site preparation and planting activities within the Late Successional Reserve and Riparian Reserve land allocations. Forest-wide goals for timber management direct the Forest to "Actively reforest areas damaged by extreme events, such as floods, wind, fires or insect infestations: (pg. 4-8). In addition, management direction for the reforestation of burned areas within these land allocations can be found in the Forest Plan as described in table 1.

Table 1. Resource-specific Standards and Guidelines (S&G) for the Project.

S&G	Direction	Resource Area	Page #
21-23	Capable lands currently not stocked with	S&G: Timber	4-47

	conifers or hardwoods should be reforested to meet management area goals.	Management	
MA 5-28	Silvicultural activities aimed at reducing risk shall focus on younger stands in LSRs. The objective will be to accelerate development of late-successional conditions while making the future stand less susceptible to natural disturbances.	Management Area 5: Special Habitat – Late Successional Reserves	4-86
MA 10-55	Maintain or restore riparian vegetation to provide summer and winter thermal regulation within the riparian area.	Management Area 10: Riparian Reserves	4-113
MA 10-63	Restore RRs to meet Aquatic Conservation Strategy. Design prescriptions to re-establish stands that provide the desired vegetation characteristics (for example, species composition and age class structure).	Management Area 10: Riparian Reserves	4-113

National Historic Preservation Act

Management of cultural resource properties according to the provisions set forth in the Programmatic Agreement is consistent with Forest plan direction, and is in compliance with the National Historic Preservation Act, as documented in the *Archaeological Survey Report Salmon August Reforestation Project CE (ASR #R2018-05-05-2430-0).*

Because there are no known historic properties located within the area of potential effect, no extraordinary circumstances exist relevant to this project which would necessitate the effects of implementation being documented in an Environmental Assessment (EA) or Environmental Impact Statement (EIS). This project will not result in any adverse effects to historic properties eligible, or potentially eligible, for the National Register of Historic Places. Implementation of this project is in compliance with all laws, regulations, and stipulations set forth in the Forest Plan.

The Endangered Species Act (ESA)

The project complies with Section 7 of the Endangered Species Act of 1973, as amended, and Forest Service Policy (FSM 2670).

The project is not within the range of any federally listed Threatened, Endangered, or Proposed plant species. A field review has been conducted, and no potentially suitable habitat has been located (Categorical Exclusion Checklist – D. Carlson, Botanist, 12/19/2017).

There is no causal mechanism to directly effect fish because no instream work is proposed. Indirect effects to fish habitat will not occur due to the low proximity of project actions to species or designated habitat and the very low probability of exposure to actions of the project. The implementation of BMP's, the limited nature of the project and project design features will limit any sediment that may be generated from the Project. There will be no indirect effects to

anadromous fish or Critical and Essential Fish Habitat (Categorical Exclusion Checklist, A. McBroom, Fisheries Biologist, 2/20/2018).

There will be no effect to any Threatened, Endangered, or Proposed wildlife species. A project review determined that no habitat will be affected by project activities (Categorical Exclusion Checklist – S. Cuenca, Wildlife Biologist, 12/18/2017).

Compliance with the Migratory Bird Memorandum of Understanding (MOU)

The Project is not likely to have a negative effect on migratory bird populations. Compliance with the Migratory Bird MOU has been considered and documented in the Categorical Exclusion Checklist.

Survey and Manage

The project area has been reviewed for species listed as manage known sites and manage high priority sites (Category B, D, or E) and there are no known sites present in locations that may be affected by project activities. The project area is exempt from Equivalent Effort fungi surveys because ground disturbing activities will not occur in stands defined as old growth (USDA 2006, 2013a). The Salmon August Reforestation Project complies with the *2001 Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines.*

The Magnuson-Stevens Fisheries Conservation and Management Act (MSA)

The Forest is not requesting consultation or conservation recommendations for Essential Fish Habitat (EFH) because the Forest has determined that there are no adverse effects to EFH through its ESA determination of "No Effect" to coho salmon or its Critical Habitat. The distribution of EFH is equivalent to the distribution of Critical Habitat.

The Clean Water Act

The intent of the Clean Water Act is met on National Forest System land by complying with water quality standards developed by the State of California, as authorized by the U.S. Environmental Protection Agency pursuant to the Federal Clean Water Act of 1972. The Porter-Cologne Act, California's corresponding state law, assigns responsibility for protection of water quality within North Coast watersheds to the North Coast Regional Water Quality Control Board. When water quality objectives are met, and beneficial uses protected, then the State considers that a project meets water quality standards. The project will include the use of Best Management Practices to reduce potential effects within Riparian Areas. These are detailed in the Category B Waiver application, available in the project record. Adherence to the parameters in the Waiver application ensure no negative effects upon water resources. The Waiver application has been prepared and will be sent to the North Coast Regional Water Quality Control Board following a signed decision, up to a 30 day waiting period is required to receive approval from the Water Board prior to commencement of on-the-ground activities. Aquatic Conservation Strategy Objectives compliance is outlined in the Categorical Exclusion Checklist, by C. Ester, Hydrologist (1/4/2018), project activities are shown to either not prevent attainment or, maintain and restore the objectives.

The Clean Air Act

Siskiyou County is identified as attainment or unclassified for carbon monoxide (CO), sulfur oxides, lead, respirable, particulate matter, and fine particulate matter for both state and federal standards. There is no further state or federal regulations for activities that generate these emissions. Siskiyou County is in "non-attainment/transitional" status for the state eight-hour ozone standards. Therefore, compliance with the General Conformity Rule of the Clean Air Act (CAA) for nitrogen oxides must be analyzed for this project. The action alternative will produce criteria pollutant and greenhouse gas emissions from the exhaust of mobile sources and hauling activities. The emissions are not anticipated to exceed the General Conformity Rule *de minimis* values and the project will comply with all state and federal air quality regulations.

Executive Order 12898 – Environmental Justice

Executive Order 12898 relating to Environmental Justice requires an assessment of whether implementation of this decision will disproportionately affect minority or low-income populations. This project will not disproportionately affect any minority or low-income populations.

Executive Order 13112 – Noxious Weeds

Executive Order 13112, Forest Service Manual 2080, and the Forest Plan require that all projects be evaluated for the risk of noxious weed introduction and spread as a result of project activities. Evaluation of the risk of introduction or spread of noxious weeds is included in the Categorical Exclusion Checklist for this project.

Implementation Date

This decision is not subject to administrative review and may be implemented immediately in accordance with the above information.

Contact

For additional information concerning this decision, contact: Danika Carlson at 11263 N. Highway 3, Fort Jones, CA 96032; phone: 530-468-1225; or email: dcarlson02@fs.fed.us.

4/3/2018

Ruth D'Amico — Date

District Ranger

Salmon/Scott River Ranger District

APPENDIX A – PROJECT MAP

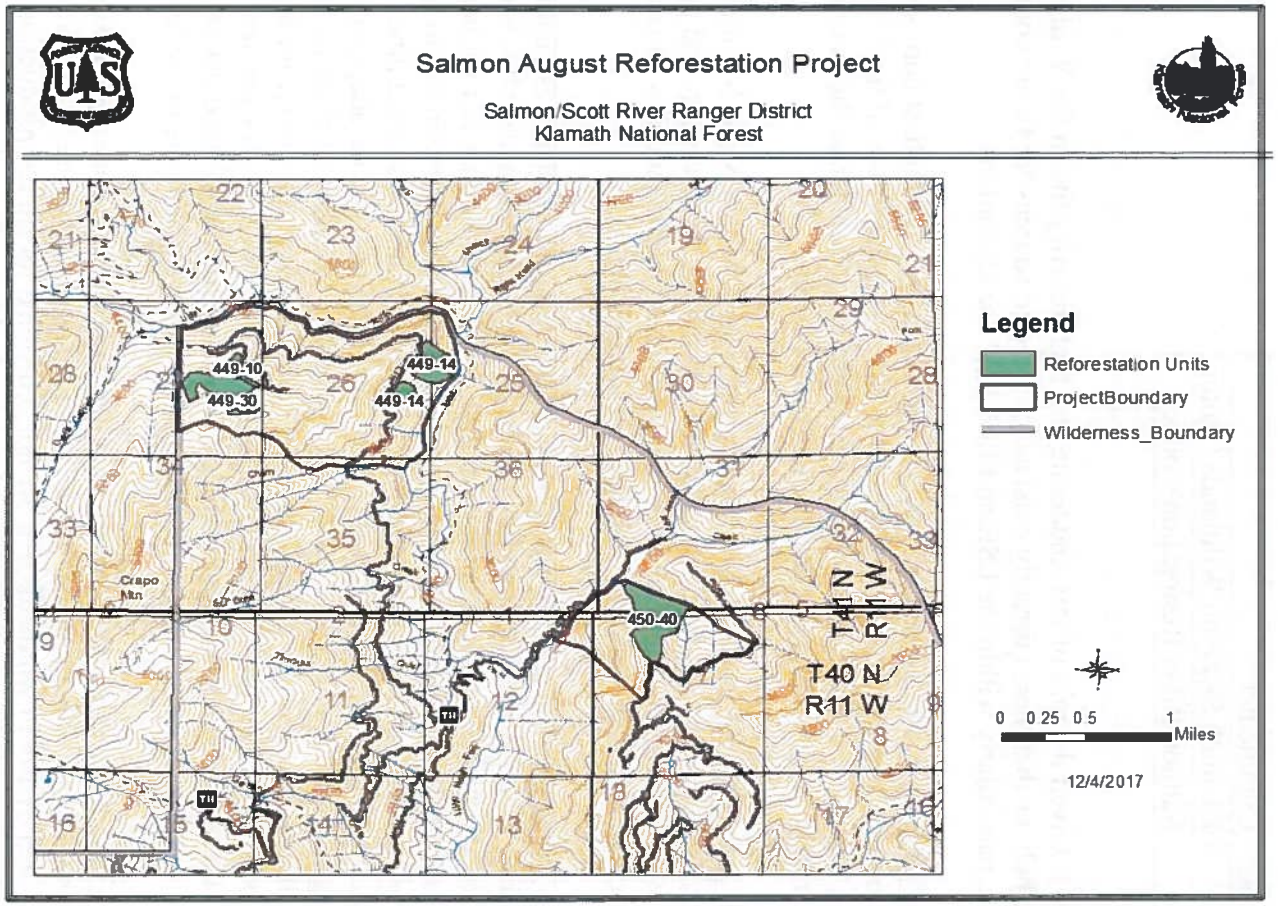

Figure 1. Project Area Map

APPENDIX B – RESPONSE TO SCOPING COMMENTS

The 30 day public scoping period for the Salmon August Reforestation Project began Thursday, December 21, 2017. The Forest received 13 comments by means of two letters, as shown in Table B-1, the comments and responses are included in this appendix. Comments are identified by the letter and comment number.

Table B-1. Scoping Letters Received on the Salmon August Reforestation Project.

Letter Number	Commenter
1	Klamath Siskiyou Wildlands Center
2	Salmon River Restoration Council

Comment #1-1: Given the mix of low, moderate and high severity fire in the Wallow Fire boundary we believe that there currently exist adequate seed sources for future conifer establishment, particularly within the LSR and IRA land use allocations.

> Forest Response: The project proposes treatment in only the highest burn severity areas with minimal availability of seed trees remaining. The objectives of the Little North Fork/Crapo LSR assessment encourage reforestation to accelerate the development of habitat in both high and moderate intensity burned areas.

Comment #1-2: In the nearby "Jess" timber sale project the Klamath National Forest is targeting large-diameter Douglas-fir trees for removal in order to reduce forest density and promote fire resiliency. Yet here the agency appears to be planting dense fiber plantations consisting primarily of Douglas-fir. The two approaches to management are antithetical.

> Forest Response: The species mix to be planted is similar to what was historically present according to the Wieslander mapping conducted in the 1930s and 1940s. Sowing orders are typically placed one year before planting. As this project has not yet begun implementation, it is possible to incorporate a species mix more similar to historic conditions which includes sugar pine, red fir, white fir and ponderosa pine in addition to Douglas-fir. Other factors to consider are climate change, species adaptability and future fire regimes when choosing ratios of species to plant. Density of planting is driven by land allocation objectives, aspect, site quality and survival rates in recent history. It is anticipated that after the 3rd year, stocking will be around 150 trees per acre. At this point, it can be determined if a thinning is necessary to control stand density. The objective of this LSR is to not need additional thinning treatments in the future.

Comment #1-3: Many land managers throughout the West Coast are attempting to mimic "high value early seral habitat with a long hangtime" through silvicultural treatments. Here that habitat has been provided by fire in wildlands that are not scheduled for timber production. Timber plantation establishment often short-circuits valuable ecological succession while increasing future fire hazard.

Forest Response: Approximately one percent of the area that burned at high severity is being proposed for treatment, allowing for early seral species and natural regeneration to develop and persist throughout a large proportion of the area.

Comment #2-1: While reforestation projects are a common and popular response to a wildfire, they are not, in many cases, of significant ecological benefit and can actually be of ecological detriment when typical plantation-style reforestation methods are used to densely restock burned-out plantations or even natural stands with a species mix that may not be reflective of the native forest.

Forest Response: In addition to the objectives of the Little North Fork/Crapo LSR Assessment for restoring habitat following wildfire, hydrologic concerns relative to stream shading have been addressed in this project. It is desirable to have conifer shading of streams, especially in the Specimen Creek area where stream shading has been greatly reduced. Responses to comment #1-2 addresses some of these concerns as well.

Comment #2-2: Fortunately, there is an abundance of site-specific data and information available about the Salmon August Reforestation Project's area that can be used to help inform, assess, and improve the proposed project. This includes:

1. Detailed historic vegetation type maps from 1931 depicting native forest composition prior to management activities began and a suite of aerial photos from 1944 to accompany the maps,
2. Information and data about previous USFS management activities within the SARP area including a previous post-fire reforestation project that burned at high severity in the 2017 Wallow Fire (and is proposed to be similarly reforested by the SARP) and,
3. Directly applicable peer-reviewed scientific studies about natural post-fire reforestation in these particular mountains.

The Salmon August Reforestation Project, however, does not seem to have been conceived of or designed in a way that is informed by this knowledge and, as such, it runs a high likelihood of repeating past mistakes and potentially contributing to future high-intensity wildfire and continued shifts away from native forest types that are adapted to this area's natural fire regime.

Forest Response: As Shatford's 2007 research concludes, "it is a challenge to integrate a wide range of forest conditions across a landscape to meet the diverse goals of needs imposed by society". After reviewing the Wieslander data, it became apparent that there was greater species diversity noted in stands 449-10 and 449-30 than the preliminary proposed planting mix indicated. As the sowing order has not been placed, this information will be incorporated into our project design to better capture the historic species mix while also considering the predicted climate change and future fire regimes. Recent communication with geneticists have suggested that no more than 15% of the planted seedlings per stand should be sugar pine. However, with historic data available, we will consider increasing their numbers in those stands. All of the seed used for establishing seedlings to be planted is collected from the seed zone in which it is to be

planted, or within a range of acceptable movement between elevations and adjacent seed zones as documented in genetic research. Stand record cards were reviewed to assess past management activities in the area. Only a subset of previously planted stands have been chosen for treatment in this proposal. Fire severity, aspect, and land allocation as well as recommendations in the Little North Fork/Crapo LSR Assessment were considered when developing this proposal. Several peer-reviewed scientific studies were evaluated which support the proposed action. A 2016 article on predicting conifer establishment post wildfire suggests that natural regeneration is not likely to meet the stocking and spatial distribution desired to meet Forest Plan direction (Welch, Safford and Young, 2016). While natural regeneration is a tool we widely use in burned areas, there are other compelling reasons to accelerate the development of conifer forests in the LSR. Approximately one percent of the area that burned at high severity is being proposed for treatment allowing for early seral species and natural regeneration to develop and persist.

Comment #2-3: Natural revegetation will occur within an ecologically meaningful timeframe and will result in a forest with greater species diversity and greater resilience to environmental stresses. From an ecological point-of-view the SARP's planting is unnecessary and likely to result in a less desirable outcome than allowing natural revegetation to occur. From a fiduciary point-of-view, it is difficult to justify the costs of such a project given that as currently designed, is not necessary and may be detracting efforts from better-suited fire resilience projects that should be completed.

Although the 155 acres proposed for SARP replanting displays an RAVG class of 3 or 4 and the expected high tree mortality associated with high-severity fire, there is no reason the believe that this area will not reforest naturally in an ecologically acceptable amount of time. This is supported by observation of past natural fire recovery in the Salmon River watershed and by multiple scientific studies. A study aptly title *Conifer Regeneration after Forest Fire in the Klamath-Siskiyous: How Much, How Soon?* (Shatford et al 2007) looked closely at post-fire conifer regeneration in our area and concluded that natural conifer regeneration exceeded a median density of 1000 stems/hectare out to a distance of 400 m from a seed source before declining farther away. Additionally, brush and hardwoods were not found to inhibit conifer abundance in Douglas-fir forest types nor did broad-leaved species present a challenge to white fir establishment. Donato et al (2009) came to virtually identical conclusions.

The 2007 Joint Fire Science Project Final Report states, "Most post-fire areas in the Klamath Mountains are well stocked with successful regeneration within 10 to 20 years of a fire so planting is not required to assure a future forest". This pattern can be seen across our landscape and the Salmon River watershed, with significant temporal and geographical variability in its fire history, is a showcase of a forest's natural regeneration capability.

Further, the particular areas targeted for reforestation in the SARP occur adjacent to unburned forest (unit 450-40) or within 400 m or less of RAVG 1 or 2 class areas that burned at low- to moderate-severity (all other units). Natural seed sources, therefore, would be expected to be more than sufficient to revegetate the entire project area. Natural seed sources offer better genetics and phenotypes than nursery stock, represent the natural mix of species, and, overall, create more resilient forests.

Swanson et al (2010) state, "Naturally regenerated early-successional forest ecosystems (ESFEs)

are likely to be better adapted to the present-day climate and may be more adaptable to future climate change. The diverse genotypes in naturally regenerated ESFEs are likely to provide greater resilience to environmental stresses than nursery-grown, planted trees of the same species. Given that climate change is also resulting in altered behavior of pests and pathogens (Dale et al. 2001), encouraging greater tree species diversity may also increase ecosystem resilience."

Forest Response: We agree that natural revegetation will occur over time. "Successful" natural regeneration in one to two decades, though highly variable, has been documented following stand-replacing fires in the Klamath Province within white fir, Douglas-fir, and Douglas-fir/tanoak stand types (Shatford, Hibbs and Puettman 2007; Joint Fire Science Program Final Report, Project 05-2-1-40 2009). Pine and mixed conifer associations were not sampled in the Shatford et al. study. More typically, vegetation is likely to go through an extensive time-period of hardwood- and brush-dominated site occupancy (Zhang, Webster, Powers and Mills 2008). Reforestation will slowly occur naturally but may take many decades to replace brushfields (Zhang et al. 2008). Within the Little North Fork LSR, it is assumed that plantations are capable of supporting mature and late successional forest, and, therefore, the desired condition is to manage them as such. Large high intensity stand replacing fires are not desirable within LSRs. In 1994, the LSR was not meeting the desired amount of late successional and old growth forest habitat with only 43% meeting that condition. The desired condition is 70-85% to be vegetated in late-successional forest. Achieving this will require protection and maintenance of the existing stands of late successional forest habitat as well as managing for the development of future late successional forest habitat (Little North Fork/Crapo LSR Assessment,1995). A 2016 study in Ecosphere assessed post-fire regeneration in 14 different fires within Region 5 forests. They found that 43% of plots showed no natural conifer regeneration and ten out of fourteen fires did not meet Forest Service stocking standards for conifer density. Conifer seedling densities were lowest in high severity fires due to increased distances to live seed trees and competition with fire-following shrubs (Welch, Safford and Young, 2016).

Comment #2-4: Site-specific experience with this exact style of post-fire reforestation projects suggests that artificially reforested areas are more likely to burn at high severity than naturally reforested areas. As such, there is a likelihood that the SARP may contribute to future high severity wildfire.

The Specimen Creek drainage burned at mixed severity in the 1994 Specimen Fire, including the area containing SARP unit 450-40. Approximate one-third of this unit was clear-cut in 1986 then replanted in 1995 (Hurry Up Timber Sale) and nearly the full remainder was replanted in 1998 as a response to the Specimen Fire (Specimen Fire Recovery Project). This vast majority of this area then burned with high severity (RAVG class 4) in the 2017 Wallow Fire. Within unit 450-40, there was a greater proportion of high severity fire in the areas treated in the Specimen Fire Recovery Project than there were in areas not treated in that project.

In fact, the pattern is essentially the same for the other surrounding areas treated by the Specimen Fire Recovery Project: fire effects from the Wallow Fire were more severe where post-Specimen Fire replanting occurred. This can be rather easily discerned by overlaying Wallow Fire RAVG class layer, the Specimen Fire Recovery Project treatment layer, and the Salmon August

Reforestation Project unit layer in GIS. Although this alone does not constitute conclusive evidence, it is quite suggestive that this style of reforestation project in this particular landscape may be more likely to burn at high severity than areas not similarly treated. Scientific studies do, however, come to conclusions in line with this observation (e.g., Thomson et al. 2007, Odion et al 2004). Shatford et al (2007) found that plantations receiving post-fire site preparation and planting burned at higher severity in subsequent wildfires than in areas that had revegetated naturally.

> Forest Response: Research has shown that the quickest way to reestablish a coniferous forest after stand replacement fire is by active reforestation (Zhang 2008). The reduction of residual fuels will be necessary to prevent future fire events from becoming stand-replacing fires that destroy planted seedlings. Research has shown fuel treatments increase the likelihood of the planted trees surviving future fires (Weatherspoon and Skinner 1995, Omi and Kalabokidis 1991). Research has also shown that plantations established in areas with high slash loadings burned severely, while those where residual slash had been adequately treated burned with much less severity and intensity or not at all (Thompson, Spies and Ganio, 2007; Weatherspoon and Skinner, 1995; Omi and Kalabokidis 1991). Anecdotal evidence from the 2014 wildfires has shown that 70% of plantations within the fire perimeters survived the fire. Also noted in the Little North Fork area following the Salmon-August Complex fires in 2017 was the high severity fire that eliminated the natural regeneration growing in the unmanaged wilderness across from a managed plantation that survived. The Little North Fork/Crapo LSR assessment views the plantations in the LSR as future habitat for this LSR.

Comment #2-5: Although artificial reforestation may not be an ecological necessity in this area, if restocking were to be implemented, it should be representative of the species mix of the natural, pre-management forests.
The proposed stocking mix does not match the historic, pre-management species mix for units 449-10 and 449-30 (Wieslander Vegetation, 1931; see attached map). As such, these two units of the SARP will trend further toward Douglas-fir dominance, while the natural dominant species, sugar pine, is relegated to a lesser species. The 1931 Wieslander map indicates red fir and white fir as the lesser species in these units, however, these species are not even part of the proposed restocking mix at all. The appropriate planting mix for units 449-10 and 449-30, in order of high to low proportion, should be sugar pine-red fir-white fir.
The proposed restocking mix is generally in line with the 1931 Wieslander Vegetation Type Maps for all other units in the SARP.
Sugar pine dominated forests are typically some of the more fire-resilient forests in our area and this forest type is of exceptional ecological importance. Sugar pines have been preferentially logged since the 1850's and they have been specifically targeted by commercial logging for over 60 years in the Salmon River watershed, leading to a significant decline in their representation across the landscape.
Perhaps the most ecologically beneficial post-Wallow Fire project for the Little North Fork drainage would be to identify areas of high severity fire that were historically dominated by sugar pine forests and very selectively grub and plant local-sourced sugar pine seedlings at relatively low densities and wide, variable spacing (e.g., grub 50-100/acre). Assisting the re-establishment of sugar pine forests where they naturally existed throughout the Little North Fork

drainage will not only aid in restoring this important forest type to the landscape and helping create a fire resilient forest type, it also perfectly aligns with the LSR management directive to enhance future old growth forests.

> Forest Response: After reviewing the Wieslander data, it became apparent that there was greater species diversity noted in stands 449-10 and 449-30 than the preliminary proposed planting mix indicated. As the sowing order has not been placed, this information will be incorporated into our project design to better capture the historic species mix while also considering the predicted climate change and future fire regimes. All of the seed used for establishing seedlings to be planted is collected from the seed zone in which it is to be planted, or within a range of acceptable movement between elevations and adjacent seed zones as documented in genetic research.

Comment #2-6: It is difficult to discern the strategy or reasons to restock plantations within an LSR and, especially, to conduct a site preparation and restocking project in an Inventoried Roadless Area.
Although a majority of the SARP occurs in fire-damaged conifer plantations, the project proposal doesn't specifically state that the purpose and need is to re-establish these conifer plantations. However, it can be assumed by the selection of plantations as virtually the only areas proposed for post-fire revegetation, that re-establishment of these plantations is, at least, one of the selection criteria for the project. With a Forest plan management directive to enhance old growth characteristics, it is difficult to grasp the rationale for restocking plantations in an LSR. Although there may be one future opportunity to thin the plantation while still attaining LSR management directives, there is no allowed future harvest that would make the plantation commercially viable.
It is even more perplexing to discern the rational for conducting site preparation and restocking in a natural stand in an Inventoried Roadless Area (unit 449-30). In addition to the issues inherent with restocking plantations in LSR, working in an IRA poses undue and unnecessary challenges for project implementation, future thinning and management of the unit, and public controversy related to work in an IRA that is contiguous with a designated Wilderness Area. Given these issues and others associated with the SARP, unit 449-30 should be dropped from the project or simply hand-grubbed and lightly replanted with locally-sourced sugar pine from the protected seed tree in Little North Fork drainage (see comment #3).
The project proposal should have expounded upon rationale and reasons to propose this work in an IRA and LSR.

> Forest Response: The Little North Fork/Crapo LSR Assessment states that LSRs are designated with objectives to maintain, protect, and restore conditions of late successional and old growth forest ecosystems which serve as habitat for associated wildlife. As stated in the response to comment #2-3, in 1994, the LSR was not meeting the desired amount of late successional and old growth forest habitat with only 43% meeting that condition. With increased fire activity in the LSR since that document was written, we can assume that the deficit continues. Recommendations within the assessment include "where large areas have been affected by stand-replacing disturbance, then reforest to accelerate the development of habitat." The assessment also notes the importance of connectivity and the adjacent wilderness for providing habitat suitable for

spotted owls. The inventoried roadless area is the link between the LSR and wilderness. Several considerations were made when developing this proposal. The Wallow Fire (66,000 acres) burned 17,207 acres at high severity or 26%. We are proposing treatment on 1% of the land base that burned at high severity to restore some ecological function desired in the LSR and surrounding habitat historically used by northern spotted owls. From an economic and ecologic standpoint, treating in the adjacent IRA to provide future late successional habitat made sense. Site preparation reduces the standing dead fuel loading to reduce the chance of future stand-replacing fire once the stand is established. Planting can accelerate the establishment of conifers throughout a stand, especially with scant seed sources and distances approaching 200 meters from a live seed source.

Comment #2-7: The Salmon August Reforestation Project proposal presented for scoping comments contains inadequate and/or missing Project Design Features so that it is impossible to gain insight into actual project features and their potential impacts and mitigations.
The SARP proposal indicates that other PDFs may be included, however, not including them prior to scoping period makes it impossible to fully assess or understand what may be included (or not) in the project.

Forest Response: Project design features for this proposal can be found in Appendix C of this Decision Memo. These design features were developed by the interdisciplinary team based on the proposal that was presented during scoping, the effects of the proposal including the implementation of the project design features is analyzed in the Categorical Exclusion Checklist.

Comment #2-8: Should the SARP be implemented, it needs to be done so in a systematic and coordinated manner so that site preparation fuels are reduced and burned prior to replanting. Similar coordination needs to be conducted with other resource management staff at KNF to make sure the project is appropriately designed and implemented.
A recent post-fire reforestation project after the 2013 Butler Fire applied the same methods to a project area near Forks of Salmon. This project was poorly planned, coordinated, and implemented, resulting in replanting taking place before activity fuels had been burned. The result is thousands of burn piles and windrows across dozens of units that are unable to be burned without killing the restocked trees planted in between them. Not only is this a reforestation project failure, it is also a significant fuels concern in a Wildland Urban Interface and domestic water supply area for a majority of the residents of Forks of Salmon.
What implementation procedures with the SARP utilize and how can it be assured that the same or similar missteps will not occur with this project?
Also related to coordination, this project should be reviewed by the Regional Ecosystem Office per the KNF Forest Plan (Klamath National Forest Plan MA5-26. 2010. P. 4-86).

Forest Response: Coordination with other resource management staff is ongoing throughout the life of the project. While burn windows can be difficult to predict, the timing for ordering seedlings, completing site preparation activities, and allocating funding to implement the planting will be addressed. This project is in compliance with the direction in the North Fork/Crapo LSR Assessment, the Regional Ecosystem Office documented review for sufficiency of the LSR Assessment in a letter dated March 11,

1996. The Regional Ecosystem Office found the assessment sufficient in framework and context for future projects and activities.

Comment #2-9: All standing snags should be retained.
The project proposal is not clear on whether standing snags will be felled as part of this project. Units 449-10 and 449-30 contain abundant snags from the 2008 Jake Fire (Ukonom Complex). Both units below the Cherry Creek Road that are identical as 449-14 also burned in 2008 but contain fewer legacy snags, however, these units are almost fully in Riparian Reserves and all large wood should be retained. Unit 450-40 burned in the 1994 Specimen Fire and has some remaining snags from that fire.
Especially in Riparian Reserves, no snags should be removed unless it can be shown that present and future CWD needs are met and other Aquatic Conservation Strategy objectives are not adversely affected (KNF Forest Plan MA10-54, p. 4-113).

Forest Response: The purpose of site preparation activities is to remove future fuel loading and prepare a site for planting a seedling. Typically, site preparation involves cutting and piling all standing dead material up to 12" dbh as well as live and dead brush and the dead component of hardwoods less than 12" dbh. It is anticipated that few if any standing snags greater than 12" dbh will need to be felled for the safety of the site preparation crew, but removal of the snag will not occur if felling is necessary. The success for regenerating a conifer forest largely depends on our ability to properly prepare the site for withstanding future fires. It is not possible to retain all standing snags and successfully implement the project. Project design features will retain all snags within 10 feet of a riparian area to provide temporary shade and wood for recruitment into stream channels. However, it is desirable to plant conifers as close as possible to stream channels to provide future conifer shade. Snags greater than 15" dbh will not be felled in this project, unless necessary for the safety of crews.

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APPENDIX C – PROJECT DESIGN FEATURES AND BEST MANAGEMENT PRACTICES

Table C-1. Project design features categorized by resource.

PDF Title	Description	Applicable Units
Bot-1	Avoid parking equipment and vehicles in weed-infested locations.	Entire Project Area
Bot-2	Equipment and vehicles will be cleaned of soil, seeds, vegetative matter, and other debris that could contain or hold seeds prior to moving to the project area, after working within an area with a known site, and after leaving the project area.	Entire Project Area
Bot-3	The Project will be monitored the 2nd and 3rd years after implementation to determine Project Design Feature effectiveness and to quickly respond to any spreading/newly introduced infestations.	Entire Project Area
WS-10	Hand piles will be placed in a checkerboard pattern whenever possible (not one pile directly above another). Hand piles will be six feet or less in diameter.	449-10, 449-14, 449-30
WS-11	Burn piles will not be placed within 30 feet of perennial stream channels greater than one foot wetted width, or within 15 feet of intermittent streams.	449-10, 449-14, 449-30
WS-12	Within Riparain Reserves, prescribed fire effects will mimic a low intensity backing fire and ignition will usually not occur there. Hand piles hay have higher fire intensity in order to consume pile material.	449-10, 449-14, 449-30
WS-14	Site preparation activities of cutting and piling of small diameter (less than 12" dbh) dead conifers and dead hardwoods, live or dead brush, and slashing of standing dead material (greater than 15" db) will be excluded from intermittent and perennial channels for a distance of 10 feet on either side of the center of the active channel. Small pockets of light vegetation removal within this exclusion buffer may be permissible for strategic individual tree planting.	449-10, 449-14, 449-30
Watershed pdfs apply to BMP 6.3 – Protection of Water Quality from Prescribed Burn Effects: To maintain soil productivity; minimize erosion; and minimize ash, sediment, nutrients, and debris from entering water bodies.		